PUBLISHED BY THE SOCIETY FOR GROWING AUSTRALIAN PLANTS

AUSTRALIAN PLANTS

Registered at G.P.O., Sydney, for transmission by post as a periodical.

PRICE: THREE SHILLINGS
SEPTEMBER, 1960 Vol. 1, No. 4

Colour Photography by Frank Hurley *Blocks by courtesy of John Sands Pty. Ltd.*

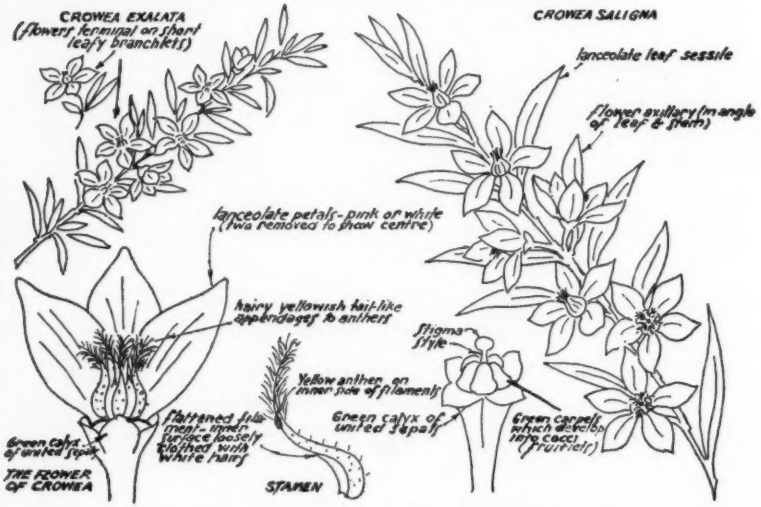
CROWEA SALIGNA — F. MUELL

Often incorrectly called *Eriostemon crowei*. A beautiful shrub of about three feet with flowers up to 1½ inches across. Suitable for a sheltered position. The fluffy anther appendages characteristic of the genus Crowea can be seen in the picture.

THE GENUS CROWEA Sm.

By JEAN GALBRAITH

Shrubs or undershrubs with glabrous undivided alternate leaves, usually rather narrow. CALYX of five blunt sepals united for some distance to form a cup. COROLLA of five lanceolate petals, pink or white, imbricate (overlapping) in bud; spreading into a broadly starlike flower, but later closing to enfold the developing fruit. STAMENS, ten, erect, inflexed, with flattened filaments, hairy on the inner surface, and anthers with conspicuous hairy appendages. PISTIL of five carpels surrounding a very short style with a more or less globular stigma. FRUIT consisting of five erect blunt cocci.

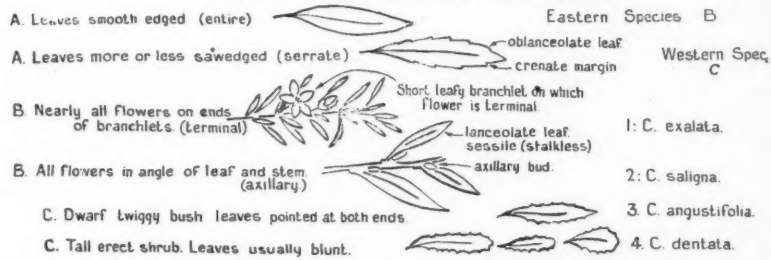

CROWEA EXALATA
(flowers terminal on short leafy branchlets)
CROWEA SALIGNA
lanceolate leaf sessile
flower axillary (in angle of leaf & stem)
lanceolate petals - pink or white (two removed to show centre)
hairy yellowish tail-like appendages to anthers
stigma
style
Yellow anther on inner side of filament
Green calyx of united sepals
Green carpels which develop into cocci (fruitlets)
flattened filament - inner surface loosely clothed with white hairy
Green calyx of united sepals
THE FLOWER OF CROWEA
STAMEN

The genus Crowea (named after English botanist J. Crowe and pronounced Crow-e-a) is an Australian endemic—that is, it is found in this country and in no other. It is closely related to *Eriostemon*, with which genus it was once united, but may be readily distinguished from it by the hairy appendages, or tails, on the anthers. These may be seen in the cover picture of Crowea *saligna* and in the detailed drawing above.

Three species of Crowea are commonly in cultivation and C. exalata is probably one of the most satisfactory small shrubs grown. Cultural requirements for C. exalata are exactly the same as for *Eriostemon*, (see p.2) but the other three species, according to Mr. Cane, who has had experience of them all, prefer a cool damp position. C. *saligna* must also be protected from frost when young. It needs a damp propagating medium and damp atmosphere for growing either cuttings or seeds. The other three species are easily propagated from cuttings or seeds in almost any medium.

Crowea *exalata* F. Muell. (Pronounced ex-*al*-a-*ta* meaning not winged). Small Crowea . Normally a shrubby small bush (1′ or 2′) bearing an abundance of bright pink flowers, ¾″ across, throughout winter and spring, and to a less extent at other times. Under exceptional circumstances bushes may be several feet high, and flowers range from (occasionally) white, or pale pink to almost red, fading in warm weather. Both leaves and flowers,

KEY TO SPECIES OF THE GENUS CROWEA


A. Leaves smooth edged (entire)
Eastern Species B
A. Leaves more or less sawedged (serrate)
oblanceolate leaf.
crenate margin
Western Spec. C
B. Nearly all flowers on ends of branchlets. (terminal)
Short leafy branchlet on which flower is terminal
lanceolate leaf. sessile (stalkless)
1: C. exalata.
B. All flowers in angle of leaf and stem (axillary)
axillary bud.
2: C. saligna.
C. Dwarf twiggy bush leaves pointed at both ends.
3. C. angustifolia.
C. Tall erect shrub. Leaves usually blunt.
4. C. dentata.

in exceptional circumstances, may be as large as those of C. *saligna*. Leaves are thin, narrow, usually linear-spathulate, (that is, linear, broadening a little toward the tip) dark green paler beneath, usually 1" long, or less. The well-branched little bushes are compact, with flowers all along the branches, not axillary but on the ends of branchlets which may be only a fraction of an inch long bearing two or three leaves or even one only. Fruitlets are separate to the base. These last two characters are the only consistent differences between C. *exalata* and C. *saligna*, although the latter has nearly always larger, more lanceolate leaves, less clustered than those of C. *exalata*.

Crowea *saligna Andr.* (pronounced *sal-ig-na* meaning willowy). Lance-leaf Crowea . As a rule a taller stiffer shrub than C. *exalata* up to 3-4 feet. It has rather erect branches and leaves pointing upward, with a large short-stalked pink flower at the base of each. Flowers vary from white or shell-pink to almost red, but in Victoria at least, are usually the same cheerful pink as *E. exalata*, deepening in colour in warm weather, when the smaller species becomes paler. They are up to 1½" across when fully open. Leaves vary from linear to lanceolate, but are often blunt, or wider at the top. Fruitlets are joined nearly to the top. One very beautiful form has flowers white in the centre, shading to clear pink for the outer 2/3 of the petals.

Crowea *angustifolia* Turez. (*an-gus-ti-fo-lia* meaning narrow-leaf). "Swamp Crowea". A very diffuse slender shrub of 2' or less, with variable leaves, usually narrow-linear 1" to 2" long, most but not all minutely serrated. Flowers are axillary, white or pink, usually under an inch across, one or two together on very short stalks. This is a swamp-lover of southern W. Australia, and I have not seen it growing, though I know of plants in cultivation. A form is known with ovate or obovate leaves with crenate edges, (i.e., with rounded teeth).

Crowea *dentata* R.Br. *(den-ta-ta* meaning toothed). White Crowea A robust bushy shrub of up to 8 or 10 feet high, though often less, with the erect habit of C. *saligna*, flowers like those of C. *Angustifolia*, and leaves linear to broad linear-spathulate, usually abruptly cut off across the tip. It is usually white flowered and is hardier than C. *saligna*. Its long flowering season makes it a desirable small shrub for a sheltered position.

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How To Grow Eriostemon & Crowea — by W. CANE

The species of Crowea, including the very fine plant on the front cover Crowea *saligna*, Crowea *dentata* and Crowea *angustifolia* require similar treatment to the species of *Eriostemon*. However, the very floriferous but generally smaller flowered Crowea *exalata* has some forms which can be grown almost in any position or soil. There are many forms of Crowea *saligna* and Crowea *exalata* some varying in colour from white through to deep pink, the former even mauve. C. *exalata* is usually available in a slender shrub of 18 inches but some forms grow to a robust shrub of 8 feet. C. *saligna* can be a sparse leafed bush or a form very densely leafed.

Eriostemon species are lovely well-shaped bushes which flower very abundantly and for long periods. Provided they are planted in a well-drained position and receive regular watering they are good garden subjects requiring very little attention. I find the south side of the house or under a deciduous tree the best position, the main thing being to shade the bushes between mid-day and 2.00 p.m.

A heavy soil suits most species, but they are adaptable in this respect. They appreciate abundant leaf-mould in and on the soil. When growing wild, unless in a gully or near a stream, their size and vigour is in proportion to the amount of humus available to the roots. All *Rutaceae*, if planted in raised beds in heavy loam in lawns do well in this district, Maffra, Victoria, some up to 30 years of age. It seems that by keeping the lawn green the necessary constant soil moisture is maintained. When grown in sandy soils we have the losses the same as with *Prostanthera* (mint bushes) with moisture fluctuations, unless some overhead shade is provided. In my experience, with the exception of some forms of *Eriostemon myoporoides*, Crowea *exalata* and Correa *reflexa*, clay within one foot of the surface makes it impossible to grow plants in the family *Rutaceae* such as *Eriostemon* and eastern *Boronia* to a greater age than five (5) years unless given shade. But! How easy and how rewarding it is for home gardeners in clay areas to build up raised gardens some 15 inches high. Remember, the ideal conditions are a heavy loam and constant moisture combined with drainage, and if these conditions are not available some shade and protection is necessary.

Losses are usually due to drying out of roots, movement in the wind or collar rot, in that order of frequency. Control of these factors is not difficult to achieve but is the key to success in growing these lovely plants. When grown in shade they can stand a much greater variation in soil moisture than when in the open, but in shade they are more subject to scale infestation and flowers after a dry season are smaller and fewer. The response in shade varies considerably for the various species but if water supply is frequent then good results can be obtained. However, all do equally well if the soil is kept constantly moist in open sunny positions and the flowering is better in full sun. Plants should be well rooted before they are put out in the open and if rooted in a glass house, they should be hardened off in a shade house or verandah for a couple of weeks. Rocks placed round the young plants are useful as a protection from wind, and for preventing evaporation from the surface soil. These plants must have adequate wind protection and if slightly exposed, must be staked securely.

Very little care of the plants is required apart from watering. As with most natives, they require a little trimming of the tops when young and pruning after flowering to maintain the shape and size you want. Fill the vases in the house, the pruning the bush receives will ensure a more

abundant supply the next year. "Collar rot" is found only by inspection of the trunk (look for decayed bark partly or entirely around the trunk at ground level) but may be prevented by good drainage and if necessary one part to forty of Bordeaux Mixture can be watered over the centre of the bush. About two gallons for a large plant. Yellowing of the leaves can be corrected by one teaspoon of sulphate of ammonia and one tablespoon of potash in a powdered form, sprinkled in a circle about three inches from the trunk, and left to dissolve with watering or rain. For scale treatment, white oil or "phosphone 40" are effective.

The value of these lovely floriferous shrubs is now becoming widely appreciated. The narrow erect leaf form of *Eriostemon myoporoides* native to N.S.W. has been in cultivation for many years as it is the easiest to propagate and grow. A larger flowered and leafed form from East Gippsland which does best in heavy soil will shortly become available from nurserymen. Some special multipetalled forms of *Eriostemon* species will also be ready soon for the home gardener market.

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. . . the propagation of eriostemon — W. CANE

All species of *Eriostemon* and Crowea can be propagated both by cuttings and seed, but seed must be allowed to ripen fully on the bush. Seed is usually collected about December. The crude method I use is to dip plastic sheets in "Phosphone 40" solution or a detergent (this is to prevent ants taking the seed) spread them on the ground under the bushes placing stones on the corners to hold them down and collect the seed each evening or before rain. Plastic sheets, several of them overlapping up to six feet diameter are required. The seed remains viable for years. I have had successful germination with any period from one week to four years. It must be protected from insects and fungi as recommended by Mr. H. Boyd in issue No. 1, using a D.D.T. powder as an insecticide and "Captan" or "Zineb" powder as a fungicide in a moisture and light proof container. Before planting, seed should be treated with detergent solution, one teaspoon to one pint of warm water poured over the seed and let stand from 15 to 30 minutes and then washed off. Alternatively it may be treated with heat by covering the seed with half a cupful of boiling water leaving the seed in the water until it cools, or by kindling a light fire of paper or straw on the seed bed.

Species of *Eriostemon* and particularly Crowea, require a damp propagating medium and a high humid atmosphere. For the germination of the seed I use a media of medium sandy loam containing one third volume of moss (shreaded) or "peat moss". A glass house is not necessary. Correct conditions can be obtained with a drained container that will not evaporate the moisture readily from the side walls, filled with the above media to a depth of four inches, and covered with a piece of loose glass giving two inches clearance above the media surface. Sprinkle the seed over the bed and press into the surface with a piece of board. Place the container in a partially shady position such as under a bush, and if exposed to sunlight, lime the glass surface. Do not allow to dry out. Seed may take anything from one to twelve months to germinate. As soon as the first seedlings appear, slide back the glass to cover only half the top of the seed box or pot. When a week old the seedlings are picked out and planted into small containers with the same medium and similar conditions of shade and humidity. This can be achieved by using tubes, tins, or small pots placed in a box with the top partly covered with glass.

Some species of *Eriostemon* grow more readily from cuttings than others. The easier species, *Eriostemon myoporoides* and *Eriostemon verrucosus*, can be rooted in the open without hormone, provided there are no drying winds, and they are grown during the warmer months. Very young wood is best for cuttings when temperatures are high, though the wood should always be at least a month old. With glass house conditions and a hot bed these can be rooted in 10 to 14 days. When conditions are cooler, wood should be proportionately older, but should never be more than a year old. Under glass house conditions the cuttings can be from one to four inches, placed ½"-1" in media, but when grown outside they should only be 1-2 inches long and take from 12 to 30 weeks to root.

All species respond to treatment with hormone (for example "Hortomone A"). Use 2 c.c. per pint of water and stand the lower half inch of the cutting in the solution for 10 to 18 hours. The cutting media is a mixture of peat moss and coarse sand although for species hardest to root, peat moss only may be tried. If planted in a pot, outside, insert the cuttings to half

their length in the media, crowded close together, place in a position of filtered sunlight up to 10.00 a.m. during summer. Do not allow to dry out and protect from even the slightest wind or draught. Cuttings root best at media temperatures of 80 degrees F. in a glass house or cutting frame but some will root over a longer period at 60 degrees F. Cuttings must be kept damp and shaded.

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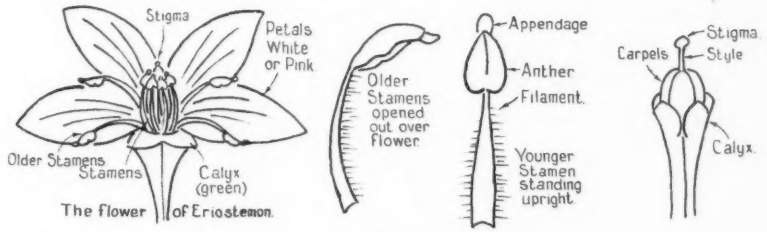
THE GENUS ERIOSTEMON Sm.

By JEAN GALBRAITH

Small trees or shrubs, occasionally under-shrubs, aromatic, more-or-less tuberculate, with undivided alternate leaves. CALYX of five blunt sepals partly united to form a cup. COROLLA of five (4 in one species) lanceolate or ovate petals, pink or white, imbricate in bud, spreading into a broadly star-like flower. Semi-double and double flowers or multi-petalled forms sometimes found. STAMENS, twice as many as petals, erect, inflexed, usually much flattened and fringed with stiff hairs, slightly clothed on the inside with woolly hairs, at least toward the top. Anthers minutely apiculate, without the hairy tails of Crowea. PISTIL of as many carpels as the petals, occasionally fewer, united round the very short style with its small round stigma. Fruit of several erect blunt cocci.



In the great pattern of plant families, *Rutaceae (Ru-ta-ce-a-e* from a name of Rue, a member of this family) belongs to the group in which petals are separated to the base (exception Correa but even in this genus you can usually trace the line of petal separation in the bells). It is distinguished from other closely related families by the strongly aromatic oil glands in the foilage of all species. It is the family to which citrus fruits belong. Their aromatic fragrance is well known.

The genera *Boronia, Eriostemon, Phebalium* and Crowea, all widely cultivated, belong to this family. The alternate leaves and (with one exception) five-petalled flowers of *Eriostemon (Eri-o-ste-mon* or *Eri-os-temon)* species distinguishes it from *Boronia* with four-petalled flowers and opposite leaves. The erect stamens, forming a cylinder round the style, distinguish the genus from *Phebalium* which has spreading stamens. The difference between *Eriostemon* and Crowea is less obvious. The anthers of Crowea have long hairy tails (making them look under low magnification like a bunch of miniature fox-brushes) while those of *Eriostemon* have very small points, often hardly visible.

The species of *Eriostemon (erion,* wool: *stemon,* stamen) are amongst the most adaptable and attractive Australian plants in cultivation. So far as our knowledge goes at present, all species have much the same cultural requirements—perfect drainage; a reasonable amount of sunshine and water; enough pruning to keep them shapely; a good mulch of leaf-mould, and no interference with surface roots. They are satisfied with any good well-drained soil, do not like excess nitrogen, and appreciate a couple of big stones to keep their roots firm and cool. A bush of *E. verrucosus* and one of *E. myoporoides,* both about thirty years old, in my garden, prove that they are not short-lived in cultivation.

With the exception of *E. spicatus* I have not seen living plants, or even

fresh specimens of endemic Queensland or W. A. species, so will confine detailed discussions to south-eastern species, giving only identification keys for the northern species, and leaving those of the west to others.

Before going farther it may be worth explaining how such keys are used. A botanical key is no more than a convenient tabulation of some characteristic features of different species, so arranged that, by eliminating one character after another, one may at last arrive at the correct name of the specimen. Thus, should you have a plant of Fairy Waxflower *(E. verrucosus)* and not know its name, the key which follows should enable you to place it, provided you know it is a native of S.E. Australia. The key is given in pictorial form so any unfamiliar technical terms should not be confusing. Looking at the key you see that the first species has hooked leaves and the second has cylindrical or club-shaped leaves. The leaves on your specimen are not uncinate (hooked) terete (cylindrical) or club-shaped so you are forced to take the first alternative, which is B. You look for the first B in the key and find it at the beginning of the next line "Petals four". Your specimen has five petals so you rule out *E. virgatum* and pass on to the next B. It is at the beginning of the next line and leads you to C. The first C tells you "Flowers all terminal". Those on your specimen are nearly all axillary, so you try the next line. "Flowers nearly all axillary"—that fits your specimen so you follow that line and come to D. The first D tells you the leaves are narrow (linear or linear-spathulate). Yours are broad. You try the next D, "Leaves one inch or less, relatively broad". Your specimen certainly fits into that category, so you follow that line which takes you to H. There are three H alternatives to consider. Two have conspicuous mid-ribs. Your specimen has not, so fits the third H which guides you to I, where you have a choice between "Branches tuberculate, *E. verrucosus*" and "Branches downy, *E. obovalis*". Yours are certainly tuberculate so you know your specimen is *E. verrucosus* which would be if written in full, *Eriostemon verrucosus* A. Rich., the "A. Rich" being an abbreviation of A. Richards, the name of the author of the species (the one who first described it). Incidentally, you can see why the plant many of us knew as *E. obovalis* is not that species but *E. verrucosus.*

South-Eastern Species — Part I

E. affinis Sprague *(aff-in-is,* allied to). "Hooked Waxflower".—A bushy shrub with hooked narrow-lanceolate leaves, and more or less tuberculate on leaves and stems. The white, often pink budded, flowers grow singly at the leaf-bases, and have a ring of small bracts at the base of the flower-stalk. The fruitlets are very beaked. N.S.W. sp.

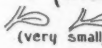
E. brevifolius A. Cunn *(brev-i-fo-le-us,* short-leaved). "Downy Waxflower". —This species was included by Bentham in *E. difformis (as E. difformis var. teretifolius)* but Black restores it as a species because of several apparently constant characteristics. It is a slender little shrub with flowers on the ends of small branchlets, as dainty as *E. difformis* and differing from it chiefly in having flowers which are downy inside, but not outside, and round, instead of pointed, tips to the anthers. The tiny leaves are narrow-linear or club-shaped, pointing upward, occasionally without the leaf-tubercles which are conspicuous on *E. difformis.* The flowers superficially resemble those of *E. difformis* and grow on the tips of short leafy branchlets. Usually a small dainty shrublet, but sometimes as much as 3' to 5' high.

E. virgatus A. Cunn ex Hooker f. *(vir-ga-tus,* twiggy) "Tasmanian Waxflower".—A twiggy little bush, the slender branches often encircled by

clusters of short leafy twigs. The flat leaves, ½" to a little over 1" long and under ¼" wide, are oblong to obovate, with a small soft point. They are dark green above and lighter below. There are no hairs, but there are tubercles on the stems and some of the leaves. They are conspicuous and look like brownish honey-globules, but apparently they often rub off mature leaves, leaving faint star-like scars. The white or pale pink flowers have four petals (occasional flowers have five) and are about ½ an inch across, growing on short stalks from the bases of the upper leaves. About four small overlapping bracts enclose the base of the flower-stalk. The stamens are very like those of *E. myoporoides*. Tasmania only.

KEY TO SOUTH-EASTERN SPECIES OF ERIOSTEMON

A. Leaves hooked, narrow-lanceolate. (N.S.W.) 1. E. affinis.

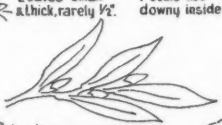
A. Leaves cylindrical (to lower terminal) to club shaped  (very small) 2. E. brevifolius.

A. Leaves not hooked. Clubbed or cylindrical only when petals are not downy inside (i.e. forms of 4 below) B

B. Petals normally 4. Leaves oblong, to obvate up to 1¼" long 3. E. virgatus.

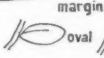
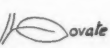
B. Petals normally 5. Not confined to Tasmania. Tasmania only.

C. Flowers terminal. Leaves small & thick, rarely ½". Petals not downy inside. 4. E. difformis.

C. Flowers axillary, and a few terminal.  D.

D. Leaves 1" to 1½" long linear to linear-spathulate G.
margins appearing crenate

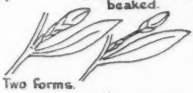
D. Leaves over 1". lanceolate to oblanceolate E.
margins entire.

D. Leaves 1" or less relatively broad  oval obvate  ovate H.

E. Flowers pedicellate Fruitlets beaked. 5. E. myoporoides.

(various forms of inflorescence of this species)

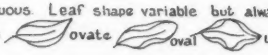
E. Flowers pedunculate (on primary stalk) Fruitlets not beaked. F.

F. Conspicuous overlapping bracts on pedicel  Two forms. 6. E. lanceolatus.

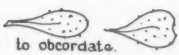
F. Bracts minute, basal (not overlapping) or no bracts. 7. E. trachyphyllus.

G. Branchlets downy leaves linear-spathulate Bent downwards at least at tips. 8. E. hispidulus.

G. Branchlets with stiff hairs not (or very slightly) downy. Linear leaves about 1" curved upward. 9. E. scaber.

H. Midrib conspicuous. Leaf shape variable but always recurved. edges  ovate, oval, usually ½" to 1" long. 10. E. buxifolius

H. Midrib conspicuous. Leaves lanceolate 11. E. myroporoides var. minor
to ovate Edges not recurved.

H. Midrib inconspicuous. Leaves obvate  to obcordate. I

I. Branches tuberculate (covered with tiny lumps.) 12. E. verrucosus.

I. Branches downy not tuberculate. 13. E. obovalis

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Verticordia Can Be Tamed

By R. DONEY

Experience of numerous species of *Verticordia* on FOREIGN ground adds support to a finding common to many genera and species of our knowledge; i.e., that we all are often misled in attempts to reproduce what we *consider* to be the *natural* set of conditions suitable to a particular plant, when, in fact, we don't *know* what those conditions are. Further, we find that many plants grow more in SPITE of their habitat than because of it. If this were not basic truth we should cease all effort to civilise the native. Therefore, when we have no exact scientific findings (nor adequate training to pursue them) let us be indefatigable triers and honest observers, and it follows that *Verticordias* can be brought into the garden and retained.

How? Read and absorb the sound advice offered by Mr. Quick (June issue) who must be commended for his thoroughness, and who leaves this writer perhaps little to add, except corroboration. Select a 'tough" specie as a first: *V. plumosa* is well known and has been observed to survive almost all conditions other than heavy clay soil and poor drainage, and appears reasonably frost hardy even in its first year. (Some 2-year plants unscathed by 7 degrees frost.) Another possible is *V. densiflora*. Several plants being grown in medium sandy loam underlain at 6" by medium-heavy clay subsoil free draining of excess water. Also frost hardy to 7 degrees known.

Some nursery observations:—Young *Verticordia* seedlings (to 1 year) have been grown in a black medium-heavy loam, well aerated, pH approx. 5.5, apparently adequate in potash and phosphate plus sufficient available nitrogen for 3-4 months good growth, when a supplementary ration was found necessary. Approx. 8% N. in solution was found beneficial, but best results were obtained by use of "Aquasol" at 1 heaped teaspoon to 2 gals. water applied weekly as supplement to normal watering (about 2 fl. ozs. per plant). Inference:—That greater nitrogen appetite exists than habitat would supply? (Not known.) Applications of sod. chloride were found to be harmless and of no apparent benefit. Use of limes; i.e., calcium carbonate or calcium hydroxide to alter pH. to 6.5—7.0 quickly caused "chlorosis". Inference:—Acid conditions are preferable. (Supported by garden success where pH. 5.5-5.8 exists.)

Where magnesium lack is apparent, weak solution (% undetermined) of mag. sulph. was found beneficial. 1 heaped teaspoon to 2 gals. water, further diluted 1 part in 8 applied twice weekly supplementing normal watering. Two applications showed results.

A constant level of capillary water is maintained, and appreciated by plants, by nightly summer watering to avoid excess humidity, and autumn—winter watering frequency determined by weather conditions—generally every second morning. Inference:—more water appetite than habitat would supply? (Not known, but probable.)

Garden plantings showed rapid first year growth where soil contained considerable decomposing organic material, e.g., leaf, stick, bark, and fungi mycelium very active, (Don't say:— "Ah, michorrizal association!" not true) but did not ultimately outstrip plants in soil less rich in organic matter and humus. Failures were found to be directly attributable to poor drainage and/or high humidity, particularly affecting *V. grandis* and *V. etheliana*.

For Sydney, and perhaps all East Coast growers a list of "probables",

in order of their chance of success, follows below. However, before you begin, some points must be adhered to.

A. Ensure good drainage consistent with good *capillary water* retention.* Even if you must use a pot, tin, or other container.

B. Keep summer water at constant, but low level; i.e., not wet, not obviously damp, but moist as though you watered it yesterday. ¼" gravel mulching 2" deep to foilage spread, but not against plant stem, is excellent.

C. Avoid planting positions offering no wind protection or those which cause excess humidity. Aspects from N. to S.W. with or without filtration of light, and good air drainage, are essential.

(**Capillary water* is that water which adheres to soil particles, as a result of surface tension, and is the water used by plants.)

1. *Verticordia plumosa:* small shrub, med. fls. pink, frost hardy? (7 degrees known).
2. *V. densiflora:* rounded shrub 2 ft. (?) Sm. fls., white ageing pink, long fig. 2 mths.? Frost hardy? (7 degrees known).
3. *V. pennigera:* sm. shrub to 3 ft.? Med. fls. rose pink, some flower most of year—hardy? (7 degrees frost.)
4. *V. drummondii:* Closely allied to *V. pennigera* and equally floriferous, smaller fls. diffuse stature (7 degrees frost).
5. *V. chrysantha* and *var. preisii:* rounded shrubs to 18ins.? Med. fls. bright yellow, very floriferous (7 degrees frost).
6. *V. serrata:* erect sm. shrub, med. fls. yellow. (7 degrees frost).
7. *V. acerosa, V. grandiflora, V. fimbrilepis:* Yellow fls. closely allied to *V. chrysantha* and equally possible (7 degrees frost).
8. *V. picta:* erect sm. shrub—2'6"? Fls. med.-lge. rose pink, floriferous, long fig. 2 mths.? Frost hardy? (7 degrees known).
9. *V. huegelii* and *VAR.:* sm. shrub to 18 ins.? Med. sm. fls. creamy ageing to rose. (4 degrees frost) Intolerant humidity.
10. *V. penicillaris:* similar to *V. huegelii,* fls. yellow ageing pink, probably more tolerant humidity (4 degrees frost).

Future speculation:—*V. spicata, V. pritzellii, V. nitens, V. grandis, V. muelleriana, V. etheliana,* are excellent species, but here placed in order of their tolerance of humidity, and recommended only as trials for the hardiest and most experienced East Coast growers. *V. spicata* and *V. pritzellii* tolerate light frost and are quite likely of success.

To those growers who try all or any of these brilliant plants, an urgent plea is made:—Proceed slowly, observe carefully, take no fancy risks, note in ink, and forward results to Plant Recording Officer, S.G.A.P.

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THE FLOWER (PART 3) By HELEN PURNELL

Three of the four kinds of floral parts, viz., the sepals, petals and stamens have been discussed in the two previous articles. This article is concerned with the female part of the flower which is known as the gynoecium.

THE GYNOECIUM:

The simplest type of gynoecium consists of one carpel or pistil. A carpel usually has three parts, an ovary, style and stigma. The ovary is located at the base of the carpel, is usually swollen, and contains a cavity called the loculus in which are found one or more structures called ovules. The ovules, after fertilization, develop to form seeds. At the upper end of the carpel is the stigma on which pollen grains germinate prior to fertilization of the ovules. The stigma is usually separated from the ovary by the elongated style. (Fig. 1). Members of the family *Leguminoseae, (Hovea, Pultenaea,* etc.) have one carpel. *Ranunculus* (buttercup) has many carpels arranged spirally on the receptacle and quite free from one another. The gynoecium of flowers with one carpel or many free carpels is known as apocarpous.

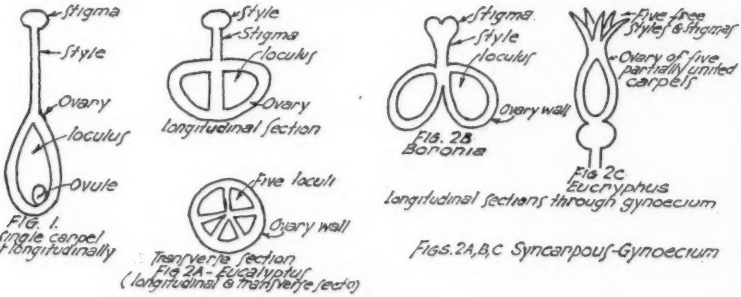

FIG. 1. A single carpel cut longitudinally

FIG 2A - Eucalyptus (longitudinal & transverse sects)

FIG. 2B Boronia

FIG 2C Eucryphus

Longitudinal sections through gynoecium

Figs. 2A,B,C Syncarpous-Gynoecium

A more complex gynoecium is formed by the partial or complete fusion of two or more carpels. A completely fused gynoecium, which is said to be syncarpous, has apparently one ovary but it may contain several loculi and there will be one style and one stigma although the latter may be variously lobed. The flower of *Eucalyptus* (Fig. 2A), e.g., has several fused carpels. Partial fusion of the carpels in the gynoecium is seen in *Boronia*, in which the carpels are free at the base but fused in the region of the style and stigma. (Fig. 2B). In *Eucryphia* and *Hypericum* (St. John's wort) the carpels are united at the base and the styles and stigmas are free. (Fig. 2C). In many families the top of the syncarpous ovary is lobed and the single style inserted in a depression between the lobes. This type of ovary may be seen, e.g., in *Epacridaceae (Epacris, Leucopogon).* In *Labiateae*, the lobing is very deep and the style is attached to the ovaries near the base of the carpel. Such a style is called gynobasic.

The number of loculi in the ovary of a syncarpous gynoecium is frequently equal to the number of carpels which have been fused together. There are, however, numerous exceptions to this. Thus, the gynoecium of *Hybanthus* (violet) which consists of three fused carpels has only one loculus, whilst the ovary of *Solanum tuberosum* (tomato) which has two united carpels, is sometimes divided into more than two loculi by the growth of extra walls known as "false septa".

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FROM YOUR LOCAL SHOP

Eucalyptus Amplifolia — A Tree with a Future

Submitted by THE FORESTRY COMMISSION OF N.S.W.

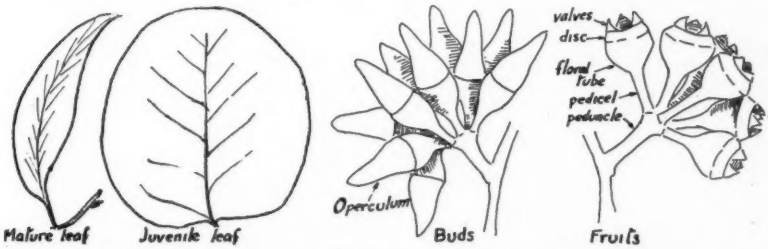
All too frequently the homebuilder in our newer suburbs painstakingly plans his layout to provide for the retention of at least one naturally occurring "Gum Tree". As time goes by his cherished tree causes concern because of its failing conditon and before long the carefully planned home setting no longer boasts a characteristic "Gum Tree".

Examination of dead and dying Eucalypts in these circumstances often reveals that the cause of the trouble is "wet feet" or root rot brought by the changed sub-soil conditions in the new housing sub-division. It would appear that the removal of timber cover from some clay sub-soils coupled with the artificial watering of lawns and gardens so increases the moisture content of many areas that the naturally occurring trees still remaining are unable to cope with the new conditions. Shallow rooting plants are generally not so affected, but deep rooting species will need to have the capacity for adaptation to wet clay, if they are to survive these new conditions.

Among those which are able to thrive under these conditions, *Eucalyptus amplifolia*—Cabbage Gum—deserves consideration when a choice is made of a species to replace the unthrifty of deceased tree. It is a spreading, handsome tree, good for shade and shelter planting on wet, clayey soils on the coast and tablelands. It is very frost resistant, and normally reaches a height of 60′ and more. It is remarkable for the rapidity of its growth. Its stem rises straight, and the tree naturally takes the pyramidal form. The trunk is smooth and greyish.

The tree is found in swamp situations on the coast, in dry rocky situations sometimes, and in a number of localities between 3,000′ and 4,000′ on the tablelands extending to the Western Slopes.

Eucalyptus amplifolia has large striking leaves of a thick texture, hence the common name of "Cabbage Gum". For those of a botanical turn of mind,



the juvenile leaves are ovate to orbicular, whilst the mature leaves are narrow to broadly lanceolate, the lateral venation irregular, the veins making angles of 20 degrees to 60 degrees with the mid rib; buds are stalked except in the variety *sessiliflora*, the operculum conical—acute, oblong with a rounded apex or tapering more or less evenly into a beak, much longer than the broadly cone-shaped, or somewhat hemispherical calyx tube; fruits usually stalked, hemispherical, about ¼ inch in diameter, the valves exserted, the disc fairly prominent.

To the residents whose homes are situated on clay sub-soil where there is a doubt as to the adequacy of drainage, where there are severe frosts and where a fast growing handsome tree yielding shelter and shade is required, *Eucalyptus amplifolia*—Cabbage Gum—is commended.

DENDROBIUM KINGIANUM

By R. F. LEANEY, F.R.H.S.

Dendrobium kingianum is widely dispersed from just north of Newcastle in N.S.W. to well into Queensland and although it is confined chiefly to the coastal strip. it is commonly met with at considerable distances from the seaboard, I have in mind, Gloucester, the Dorrigo Plateau and Mt. Lindsay on the MacPherson Ranges as three of the more inland areas where it is quite common.

The species vary greatly in both plant-form and florescence and goes through from the darkest purple flowers to purest white in the albino form. Although many variations occur, I have always felt that it might be

1. Flower, front and side views, slightly reduced.

4. Column, from the front.

a—anther
r—rostellum
s—stigma

2. Labellum and column, from the side. Ovary seen at back of column, which is almost concealed by lateral lobes of labellum.

3. Column, from the side, showing the long foot to which the base of the labellum is attached.

Partly after Rupp.

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TASMANIA—*Prionotes cerinthoides* (cuttings), *Cyanthodes acerosa*, "Crimson Berry" (cuttings and ripe berries).

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wise to divide *D. kingianum* into two main groups and for the want of better names, I have always known them as the "N.S.W. form" and the "Queensland form". A typical N.S.W. form has short pseudo-bulbs, never more than four or five inches long, about as thick as a pencil, usually two or three leaves at the apex, not noticeably bulbous and not tapering, with erect flowerscapes carrying two or three, dark violet, good textured flowers, whereas the typical Queensland form has long, very pyriform bulbs often up to twenty-four inches, I have collected plants with bulbs over thirty inches long. The Queensland form always tapers very noticeably to the apex, slimming right down to an eighth of an inch or less, frequently carries five or six leaves at or very near the apex and produces long, flexuous racemes up to fourteen inches with ten or twelve flowers.

It is in the Queensland form where the greatest number of floral variants occur, indeed one seldom sees precisely the same colour twice and the lovely pure albino form was found in Queensland. Apparently this true albino has only been discovered once and was, I believe, collected by the late Mr. F. M. Bailey while in the company of the late Mr. Weinthal from whom I was fortunate enough to acquire a small piece which still does well. There are many very pale varieties of *D. kingianum*, indeed some of them are so nearly white that one requires a glass to see the pink spots, and or suffusion, right down in the labellum, but these should not be confused with *D. kingianum var. "Album"* which is absolutely snow-white with the faintest lemon stain right down in the labellum and is a true albino.

Both the N.S.W. and Queensland forms have figured in the production of natural hybrids. *Dendrobium delicatum nm* kestevenii* (Rupp) Leaney, is a natural hybrid between the N.S.W. *D. kingianum* and *D. speciosum*. *D. delicatum* F. M. Bail, is the same cross but the Queensland form figured as one of the parents. The difference between *D. delicatum* and *D. kestevenii* is very pronounced but as they are the result of the same crossing, they can only bear the same name, and as *D. delicatum* was the first by many years, to be described, the other natural hybrid should be known as *D. delicatum nm kestevenii*.

**nm (nothomorph)* means hybrid. *D. kestevenii* (Rupp), Orchids of N.S.W., 1943, page 114.

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AN AUSTRALIAN ORCHID

—Photo by R. F. Leaney

DENDROBIUM KINGIANUM—A fine rosy form of the Queensland type from the area of Mt. Lindsay on the MacPherson Ranges.

It may be interesting at this stage to mention that I have raised from seed both *nm. delicatum* using the Queensland form of *D. kingianum* and *nm. kestevenii* using the N.S.W. form and both came true to their types, indeed more closely true than one would have expected. A subsequent cross between the *northomorph kestevenii* back to the N.S.W. *D. kingianum* again produced some very interesting extremely fat-bulbed miniature plants with quite fine, large flowers.

A characteristic of the N.S.W. form is that the occurrence of aerial growths is extremely rare, and yet on the Queensland form aerial growths are most prolific. Plants often being just a mass of aerials. Both forms appear to grow in clumps on rocks, I have never seen them growing in nature any other way, but they take equally well to cultivation and clumps potted in fern-fibre or attached to fern rafts appear to do so splendidly. They do not appear to have that distressing habit of fading away so often exhibited by native plants and flower profusely year after year in cultivation. Perhaps it would be interesting to mention I have a *D. kingianum* which has been doing well since 1932 and I understand the albino plant has been in cultivation for at least sixty years.

D. kingianum—first described in the year of 1844 so it is not a new one—all agree that the plant can be very variable—leaves three to six, lanceolate, not thick, but very persistant—two to four inches long—flowers two to nine from pure white to deep mauve, dorsal sepal erect, sometimes slightly incurved, about half an inch long and an eighth of an inch broad, inclined to be lanceolate, lateral sepals much broader though about the same length, petals shorter and narrower—labellum with acute lateral lobes, a broad mid-lobe slightly fan-shaped and mucronate, recurved, often splashed with mauve in the pale forms, stout column half as long as the labellum.

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